CLAIMS

What is claimed is:

1. A method for calibrating an imaging device comprising the steps of:

digitizing an image of a textureless surface having a uniform illumination; and

computing the effects of the imaging device based on pixel intensity drop off effects in the digitized image.

2. A method as claimed in Claim 1 wherein the pixel intensity drop off effect is dependent on an off-axis pixel projection effect.

3. A method as claimed in Claim 1 wherein the pixel intensity drop off effect is dependent on a vignetting effect.

4. A method as claimed in Claim 1 wherein the step of computing is dependent on a camera tilt effect.

5. A method as claimed in Claim 1 further comprising the step of computing the parameters of a model by minimizing the difference between the digitized image and the model.

6. A computer program product for calibrating an imaging device, the computer program product comprising a computer usable medium having computer readable code thereon, including program code which:

retrieves a digitized image of a textureless surface having a uniform illumination; and

computes parameters of the imaging device based on drop off effects of the digitized image.

7. A computer program product as claimed in claim 6 wherein the drop off effects are dependent on an off-axis pixel projection effect.

8. A computer program product as claimed in claim 6 wherein the drop off effects are dependent on a vignetting effect.

9. A computer program product as claimed in claim 6 wherein the program code computes parameters based on a camera tilt effect.

10. A computer program product as claimed in claim 6 wherein the program code computes parameters of a model by minimizing difference between the digitized image and the model.

11. A computer system comprising:

a memory system;

an I/O system connected to the memory system;

a storage device connected to the I/O system; and

a calibration routine located in the memory system responsive to a request for calibration which:

retrieves a digitized image of a textureless surface having a uniform illumination; and

computes parameters of the imaging device based on drop off effects of the digitized image.

12. A computer system as claimed in claim 11 wherein the drop off effects are dependent on an off-axis pixel projection effect.

13. A computer system as claimed in claim 11 wherein the drop off effects are dependent on a vignetting effect.

14. A computer system as claimed in claim 11 wherein the calibration routine computes parameters dependent on a camera tilt effect.

15. A computer system as claimed in claim 11 wherein the calibration routine computes parameters of a model stored in the storage device, by minimizing difference between the digitized image and the model.

16. An apparatus for calibrating an imaging device comprising:

means for digitizing an image of a textureless surface having a uniform illumination; and

means for computing parameters of the imaging device based on drop off effects of the digitized image.

17. An apparatus as claimed in claim 16 wherein the drop off effects are dependent on an off-axis pixel projection effect.

18. An apparatus as claimed in claim 16 wherein the drop off effects are dependent on a vignetting effect.

19. An apparatus as claimed in claim 16 wherein the means for computing computes parameters based on a camera tilt effect.

20. An apparatus as claimed in claim 16 wherein the means for computing further comprises means for computing parameters of a model by minimizing difference between the digitized image and the model.

21. An apparatus for calibrating an imaging device comprising:

a retrieval routine which retrieves a digitized image of a textureless surface having a uniform illumination; and

a parameter computing routine which computes parameters of the imaging device based on drop off effects of the digitized image.

22. An apparatus as claimed in claim 21 wherein the drop off effects are dependent on an off-axis pixel projection effect.

23. An apparatus as claimed in claim 21 wherein the drop off effects are dependent on a vignetting effect.

24. An apparatus as claimed in claim 21 wherein the parameter computing routine computes parameters based on a camera tilt effect.

25. An apparatus as claimed in claim 21 wherein the parameter computing routine further comprises a model routine which computes parameters of a model by minimizing difference between the digitized image and the model.